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PATENT SPECIFICATION



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PROVISIONAL SPECIFICATION

Improvements in Moulding Pastry and Other Plastic Substances

I, CHARLES EDWIN COX, of Borough Street, Castle Donington, Leicestershire, a British Subject, do hereby declare the nature of this invention to be as follows:—

This invention is for improvements in moulding pastry, confectionery and other plastic substances and is particularly concerned with effecting improvements in the manufacture of pork pies. In moulding the pastry shell of a pork pie, use is made of a simple piece of apparatus comprising a female moulding member of the necessary pot-like shape and a male member adapted to be inserted within it by movement of a hand lever. A plastic mass of pastry or dough is inserted in the female mould member and the male mould member forced down on to it. By this movement the plastic mass is squeezed up and round the male member (which is of substantially less diameter than the interior of the female member) so that it takes upon itself the desired pot-like form. It is then necessary to retract the male member from the interior of the formed pot and to remove the latter from the female mould. This is a matter of some difficulty, but it is facilitated if the male member is heated. For this purpose, the apparatus referred to includes a gas jet, which may continuously play or be moved at the appropriate time to play upon the top of the male member and to heat it. When so heated, the member may be withdrawn with comparative facility. Unfortunately, however, the plastic pastry is also heated in this process and this preheating, prior to the cooking of the pie, has an adverse effect on the quality of the resultant pastry in that it hardens the dough and destroys the effect of the baking powder, so that during cooking the pastry does not rise properly and the resultant product is rather hard. It is this disadvantage that the present invention primarily seeks to obviate, by facilitating the separation of the two moulding members without the application of heat thereto.

With this object in view the invention provides a method of moulding pastry or a like plastic material in which the latter

is shaped between two die or mould members, which includes effecting the separation of the said members, subsequent to the moulding operation, by the operation of pneumatic pressure between them. More specifically, the contact face between at least one of the members and the plastic mass is subjected to pneumatic pressure, which may be communicated to the said face by way of a conduit formed through one of the members and opening on to the face.

As previously, use may be made of a piece of apparatus comprising a pot-like female member and a plug-like male member adapted to be inserted into it by the operation of a lever or the like to mould a mass of dough or paste between them. One of these members, however, and desirably the male member, is provided with an air conduit leading through it to its horizontal or end face and in separating the members air is forced under pressure through this conduit so that the air pressure eases the two members apart. If the conduit is formed in the male member, then as will be understood the application of the air pressure eases the male member out of the moulded paste and leaves the latter within the female member of the mould. This air pressure does not, as might be thought, pierce a hole through the plastic mass at a point of register with the end of the conduit because during the moulding operation a plug of dough is forced into the conduit and the effect of the air pressure is to disperse or flatten out that plug.

Desirably the air pressure is automatically brought into operation by movement of that element, such as a hand lever, by which the two members of the mould are caused to approach and recede. For example, assuming that the said element is a lever which is lowered to bring the male member into the female member and is raised to separate them, the upward movement of the said lever may bring the pressure into operation. In one form of the apparatus, this upward movement of the lever simply turns on a cock or the like controlling a supply of compressed air. In another arrangement, it operates

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an air pump of the simple cylinder and plunger type to compress air and force it into the conduit. In either case, as the lever is raised, it raises the entire mould 5 whereupon the operator places his or her hand beneath the lower female member of it to prevent it falling when separation occurs.

It has been found that pork pies the 10 pastry shells of which are produced in this

manner are of better quality than those produced by the methods at present generally in use, this improvement being due to the avoidance of partial heating before cooking.

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Dated this 7th day of September, 1935.

ERIC POTTER & CLARKSON,
Chartered Patent Agents,
London and Nottingham.

COMPLETE SPECIFICATION

Improvements in Moulding Pastry and Other Plastic Substances

I, CHARLES EDWIN Cox, of Borough Street, Castle Donington, Leicestershire, a British Subject, do hereby declare the nature of this invention and in what 20 manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—
This invention is for improvements in moulding pastry, confectionery and other 25 plastic substances and is particularly concerned with effecting improvements in the manufacture of pork pies. In moulding the pastry shell of a pork pie, use is made of a simple piece of apparatus comprising 30 a female moulding member of the necessary pot-like shape and a male member adapted to be inserted within it by movement of a hand lever. A plastic mass of pastry or dough is inserted in the female 35 mould member and the male mould member forced down on to it. By this movement the plastic mass is squeezed up and round the male member (which is of substantially less diameter than the interior 40 of the female member) so that it takes upon itself the desired pot-like form. It is then necessary to retract the male member from the interior of the formed pot and to remove the latter from the 45 female mould. This is a matter of some difficulty, but it is facilitated if the male member is heated. For this purpose, the apparatus referred to includes a gas jet, which may continuously play or be moved 50 at the appropriate time to play upon the top of the male member and to heat it. When so heated, the member may be withdrawn with comparative facility. Unfortunately, however, the plastic 55 pastry is also heated in this process and this preheating, prior to the cooking of the pie, has an adverse effect on the quality of the resultant pastry in that it hardens the dough and destroys the effect of the 60 baking powder, so that during cooking the pastry does not rise properly and the resultant product is rather hard. It is this disadvantage that the present invention primarily seeks to obviate, by facili-

tating the separation of the two moulding 65 members without the application of heat thereto.

With this object in view the invention provides a method of moulding pastry or a like plastic material in which the latter 70 is shaped between two die or mould members, supported during the moulding operation on a bed, which includes raising the said members out of contact with the bed subsequent to the moulding operation and after raising said members effecting the separation thereof by the application of fluid or pneumatic pressure 75 between them.

Viewing the invention from another 80 aspect same comprises an apparatus for moulding pastry or like plastic material comprising in combination a die or mould member, a support for a cooperating die or mould member, means for moving the 85 first member towards the support to mould the pastry or the like between the two die members, means for moving both members away from the support, and means for thereafter applying compressed air to 90 the contact face between the first member and the pastry or the like and by so doing separating the two die or mould members.

As previously, use is made of a piece 95 of apparatus comprising a pot-like female member, and a plug-like male member adapted to be inserted into it by the operation of a lever or the like to mould a mass of dough or paste between them. One of these members, however, and desirably 100 the male member, is provided with an air conduit leading through it to its horizontal or end face and in separating the members air is forced under pressure through this conduit so that the air pressure forces the two members apart. If the conduit is formed in the male member, then as will be understood the application 105 of the air pressure releases the male member from the moulded paste and leaves the 110 latter within the female member of the mould. This air pressure does not, as might be thought, pierce a hole through

the plastic mass at a point of register with the end of the conduit because (if said end is open) during the moulding operation a plug of dough is forced into the conduit 5 and the effect of the air pressure is to disperse or flatten out that plug.

The air pressure is automatically brought into operation by movement of that element, such as a hand lever, by 10 which the two members of the mould are caused to approach and recede. For example, assuming that the said element is a lever which is lowered to bring the male member into the female member and 15 is raised to separate them, the upward movement of the said lever may bring the pressure into operation. In one form of the apparatus, this upward movement of the lever simply turns on a cock or the 20 like controlling a supply of compressed air. In another arrangement, it operates an air pump of the simple cylinder and plunger type to compress air and force it into the conduit. In either case, as the 25 lever is raised, it raises the entire mould whereupon the operator places his or her hand beneath the lower female member of it to prevent it falling when separation occurs.

30 It has been found that pork pies the pastry shells of which are produced in this manner are of better quality than those produced by the methods at present generally in use, this improvement being 35 due to the avoidance of partial heating before cooking.

In order that the invention may be better understood reference will now be made to the accompanying drawings in 40

Figure 1 is a perspective view of apparatus according to this invention for moulding pastry.

Figure 2 is a sectional elevation of the 45 working parts thereof, and

Figure 3 is a perspective view of an accessory employed in the said apparatus.

Throughout this description like reference numerals indicate like parts.

50 The apparatus comprises a base 10 to which a plate 11 is removably secured, said plate being pierced with a central aperture to receive the pot-like female member 12 of the mould. The plate 11 is made 55 removable so that another, having a central aperture of a different size to correspond with pot-like member 12 of a different diameter, may be substituted for it. With this pot-like member 12 a male 60 member 13 co-operates. This male member is screwed or otherwise removably attached to the lower end of a piston rod 14 that is slidable vertically through a sleeve 15 supported by means of a bracket 65 16 from the base 10. This piston rod and

the male member 13 may be raised and lowered by means of a handle 17 pivoted at 18 to the bracket 16 and connected to the piston rod by links 19. It will be seen from Fig. 1 that these links extend 70 from their pivots 20 on the handle down to a collar 21 near the lower end of the piston rod to which collar they are attached by trunnions. Hence when the handle 17 is lowered the male member 13 is forced into the female member 12 to mould a mass of dough or paste 22 placed between them, and when the handle is raised the male member is raised also. Because of the adhesion between the male member, the paste, and the pot 12, upon 75 such movement the latter is also lifted from above the base 10. This upward movement also serves to force air down through a conduit 23 in the interior of the piston rod 14 to the under side of the male member 13 so that the pot 12 containing the moulded pastry 22 is forced off the male member 13 by the pressure of the air. In this operation the pot 12 should 80 of course be supported by the operator's hand.

Preferably the piston rod 14 is connected to an air pump of the simple cylinder-and-plunger or piston type. In the arrangement illustrated a cylinder 24 having its upper end closed is secured to the top of the sleeve 15. In this cylinder a piston, secured to the top of the piston rod 14, works. This piston conveniently 100 comprises a cup washer 25 of rubber or leather secured between washers 26 and 27 by a nut 28 screwed on to the top end of the piston rod 14. Hence, during the upward movement of the piston rod, air 105 is compressed above the piston and air flows into the space beneath the piston through the inlet 29.

The arrangement is such that air is not forced down the conduit 23 to the mould 110 until a predetermined point in the upward stroke of the piston. For this purpose the conduit 23 is advantageously controlled by a valve the head 30 of which is drawn against a seating at the 115 bottom end of the piston rod by means of a compression spring 31 that encircles the stem 32 of the valve, said stem extending up through the conduit 23. As the piston nears the upper end of its stroke the valve 120 is opened by an adjustable stop. Conveniently this stop consists of a screw 33 extending down through the cylinder head and provided with a nut 34 securing it in the desired position of adjustment; 125 the upward movement of the piston brings the valve stem or some part thereof into contact with the end of this stop to force the valve open against the action of the spring 31. In the construction illustrated 130

two nuts 35 are screwed on to the top end of the valve spindle 32, providing an adjustment for the spring 31 and for the length of the spindle. It is the top 5 one of these two nuts that is brought into contact with the bottom end of the adjustable stop 33.

It will be noticed that when the air valve is closed the under face of the 10 valve head 30 is flush with the bottom face of the piston rod 14 and the under face of the male member 13. It has been found that with this arrangement the air pressure does not pierce a hole in the 15 paste 22.

According to a subsidiary feature of this invention that surface of the male member 13 into contact with which the paste is brought in the moulding operation is roughened as for example by knurling or by turning shallow grooves or a shallow thread in it. It is found that this facilitates the removal of the moulded paste. It has also been found that when 25 the paste is being moulded into its required shape the surplus that is extruded from between the two members of the mould exhibits a tendency to creep up vertically around the outer edge of the 30 male member 13; therefore around the male member there is a down-turned lip which, as is clearly indicated in Fig. 2, guides the extruded paste in a downwards direction.

35 After the paste has been moulded into a shell of the desired shape and that shell has been filled and a paste lid superimposed on it, the said lid may be cut and trimmed with a fancy edge by means 40 of the member 36, shown in Fig. 3, which may be substituted for the member 13.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is 45 to be performed, I declare that what I claim is:—

1. A method of moulding pastry or like plastic material in which the latter is shaped between two die or mould members 50 supported during the moulding operation on a bed, which includes raising both members out of contact with the bed subsequent to the moulding operation and after raising said members effecting the 55 separation thereof by the application of fluid or pneumatic pressure between them.

2. A method according to Claim 1, in which the contact face between one of the members and the plastic mass is subjected to pneumatic pressure. 60

3. An apparatus for moulding pastry or like plastic material comprising in combination a die or mould member, a support for co-operating die or mould member, means for moving the first member towards the support to mould the pastry or the like between the two die members, means for moving both members away from the support, and means for thereafter applying compressed air to the contact face between the first member and the pastry or the like and by so doing separating the two die or mould members. 65

70 4. An apparatus according to Claim 3, wherein the first-mentioned member is a male member and the second-mentioned one is a female member. 75

75 5. An apparatus according to Claim 3 or Claim 4, having an air-compressor of the piston-and-cylinder type operated upon movement of the first-mentioned member away from the support, and a connection between said member and the movable element, such as the piston, of the compressor. 80

85 6. An apparatus according to Claim 5, having an air valve that is released after the commencement of said movement. 90

90 7. An apparatus according to Claims 5 and 6, comprising a plunger or shaft connecting the first member and the movable element of the compressor, an air conduit extending down it from the compressor to the member, the valve being at the contact face of said member, and an operating connection extending from the valve up the shaft to the compressor for opening movement as the piston-and-cylinder compressor is collapsed. 95

95 8. An apparatus according to Claim 4, 100 or to Claim 4 as modified by any of Claims 5—7, wherein the contact face of the male member is roughened.

9. An apparatus for moulding pork pies substantially, as described herein 105 with reference to the accompanying drawings.

Dated this 8th day of October, 1936.

ERIC POTTER & CLARKSON,
Chartered Patent Agents,
London and Nottingham.

[This Drawing is a reproduction of the Original on a reduced scale.]

Fig. 1.

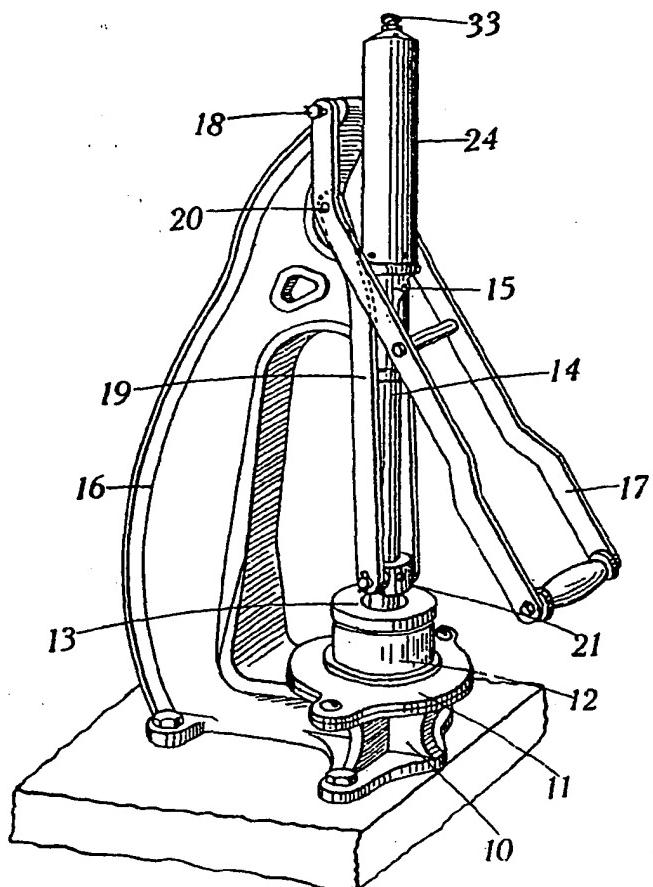


Fig. 3.

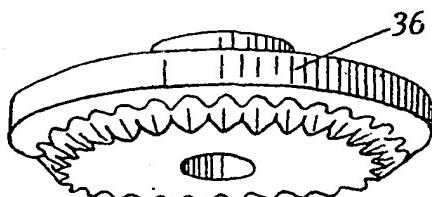


Fig. 2.

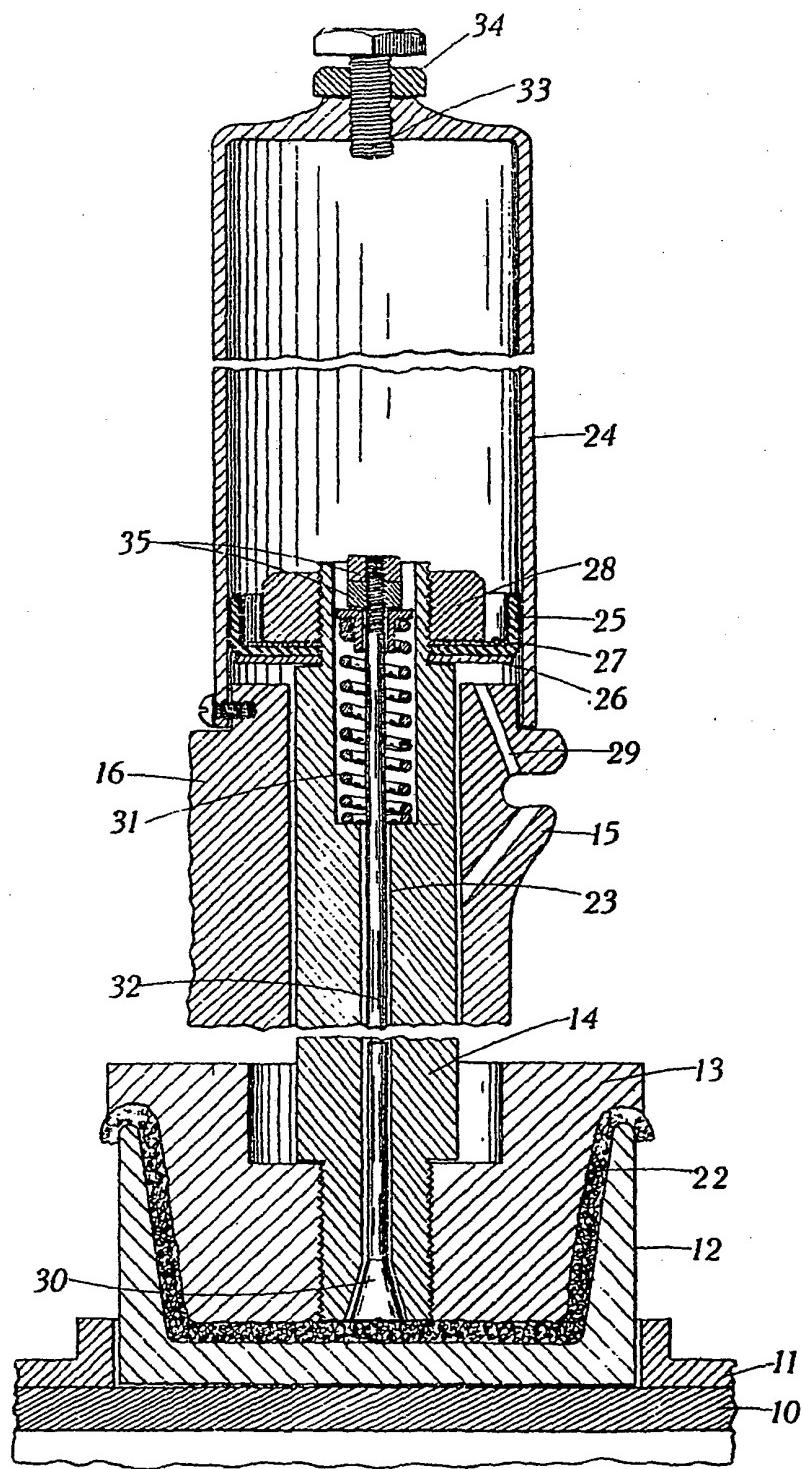


Fig. 1.

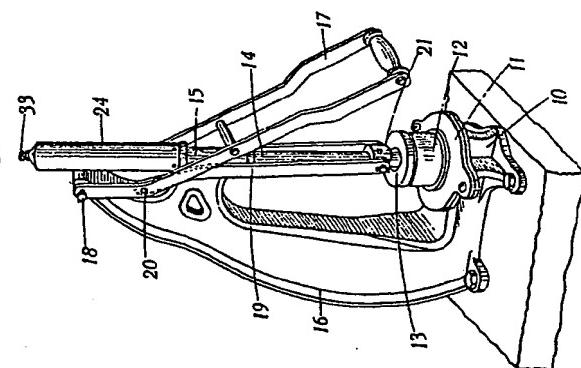
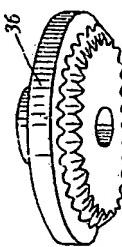


Fig. 3.



(This drawing is a reproduction of the original on a reduced scale.)

Fig. 2.

